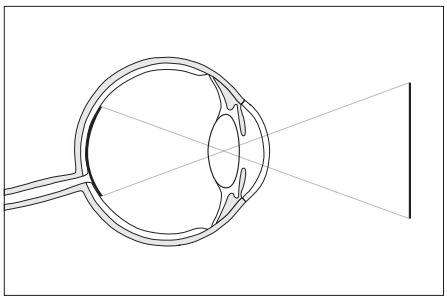
2.0 Basics

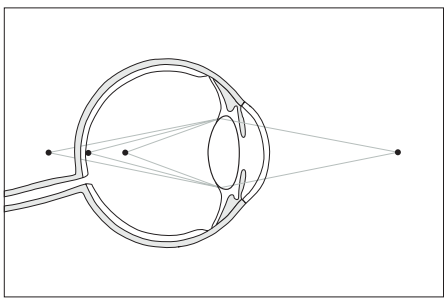
Perception

Most of the information we receive about the world around us is through our eyes. Light is not only an essential prerequisite and the medium by which we are able to see. Through its intensity, the way it is distributed throughout a space and through its properties, light creates specific conditions which can influence our perception.

Lighting design is, in fact, the planning of our visual environment. Good lighting design aims to create perceptual conditions which allow us to work effectively and orient ourselves safely while promoting a feeling of well-being in a particular environment and at the same time enhancing that same enviroment in an aesthetic sense. The physical qualities of a lighting situation can be calculated and measured. Ultimately it is the actual effect the lighting has on the user of a space, his subjective perception, that decides whether a lighting concept is successful or not. Lighting design can therefore not be restricted to the creation of technical concepts only. Human perception must be a key consideration in the lighting design process.



Spherical aberration. Projected images are distorted due to the curvature of the retina.



Chromatic aberration. Images are blurred due to the various degrees of refraction of spectral colours.

2.1.1 Eye and camera

The process of perception is frequently explained by comparing the eye with a camera. In the case of the camera, an adjustable system of lenses projects the reversed image of an object onto a light-sensitive film. The amount of light is controlled by a diaphragm. After developing the film and reversing the image during the enlarging process a visible, two-dimensional image of the object becomes apparent.

Similarly, in the eye, a reversed image is projected onto the inner surface of the eye, the so-called fundus oculi, via a deformable lens. The iris takes on the function of the diaphragm, the light-sensitive retina the role of the film. The image is then transported via the optic nerve from the retina to the brain, where it is adjusted in the cortex and made available to the conscious mind.

Comparing the eye with the camera in this way makes the process of vision fairly easy to understand, but it does not contribute to our comprehension of perception. The fault lies in the assumption that the image projected onto the retina is identical to the perceived image. The fact that the retina image forms the basis for perception is undisputed, but there are considerable differences between what is actually perceived in our field of vision and the image on the retina.

Firstly, the image is spatially distorted through its projection onto the curved surface of the retina – a straight line is as a rule depicted as a curve on the retina.